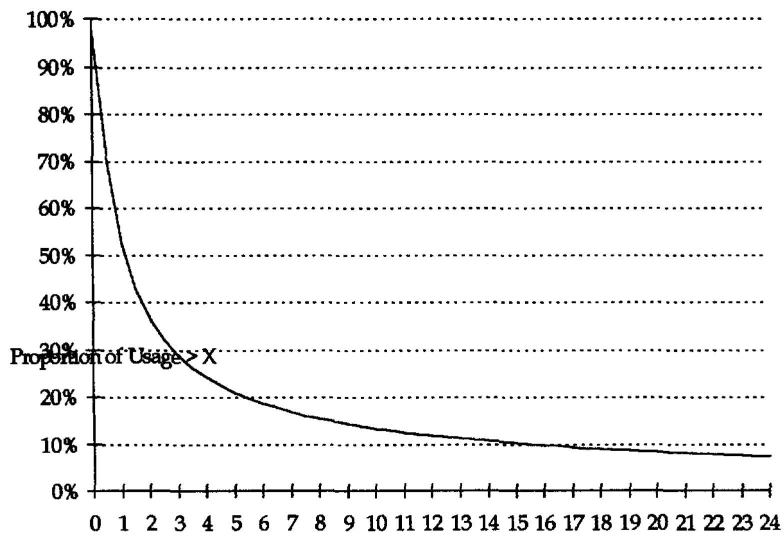
Figure 3

Internet Dial-Up Usage Patterns - Proportion of Usage by Call Duration

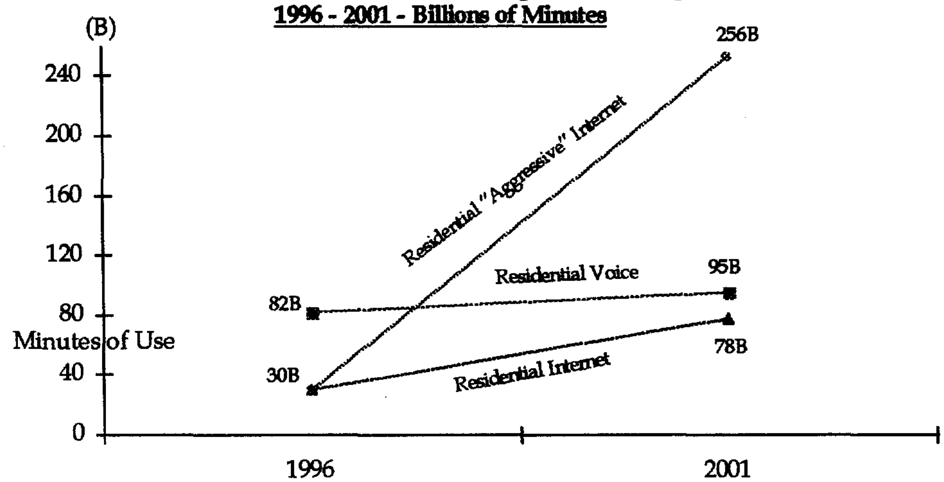


Source: Pacific Bell traffic study

The magnitude of the Internet's impact on Pacific Bell's voice network is dramatically illustrated by comparing the total MOU generated by dial-up residential Internet subscribers with the MOU generated from residential voice users. (Figure 4).

Figure 4

Annual Residential Internet Usage v. Voice Usage
1996 - 2001 - Billions of Minutes



Source: Pacific Bell traffic study; Veronis, Suhler; Yankee Group; Jupiter Communications; Pacific Telesis Estimates

- The "Residential Internet" line uses 1996 levels of 1.8M residential dial-up Internet subscribers averaging 45 MOU per day and a projected 3.9M residential Internet subscribers averaging 55 MOU per day in 2001.

- The "Residential Voice" line uses 1996 actual data of 10.2M residential voice subscribers averaging 22 MOU per day and a projected 11.8M residential subscribers with 22 MOU in 2001.

In 1996, residential Internet dial-up traffic flowing through Pacific Bell's voice network accounted for 27% of total residential traffic.[8] Using conservative assumptions for Internet dial-up traffic in 2001 (see Figure 1, footnote 5), there will be almost as much residential Internet dial-up traffic as residential voice - an extraordinary opportunity and challenge for Pacific Bell.

If more aggressive forecasts of Internet usage are realized - e.g., households become increasingly dependent on the Internet for real-time information (e.g., news, weather, stock quotes, sports scores, etc.), entertainment and games, communications (e.g., e-mail, chat rooms, etc.) and transactions (books, CDs, film tickets, travel arrangements, etc.) - Internet traffic will overwhelm voice traffic.

- The "Residential Aggressive" line projects 3.9M residential users averaging 3 hours of use per day in 2001.

- Internet dial-up traffic in this scenario would be 2.7 times that of voice.

[8] 30B residential Internet MOU/112B total residential MOU (30B Internet MOU + 82B Voice MOU)

3.0 Impact of Internet Traffic on Pacific Bell's Voice Network

3.1 Network Congestion

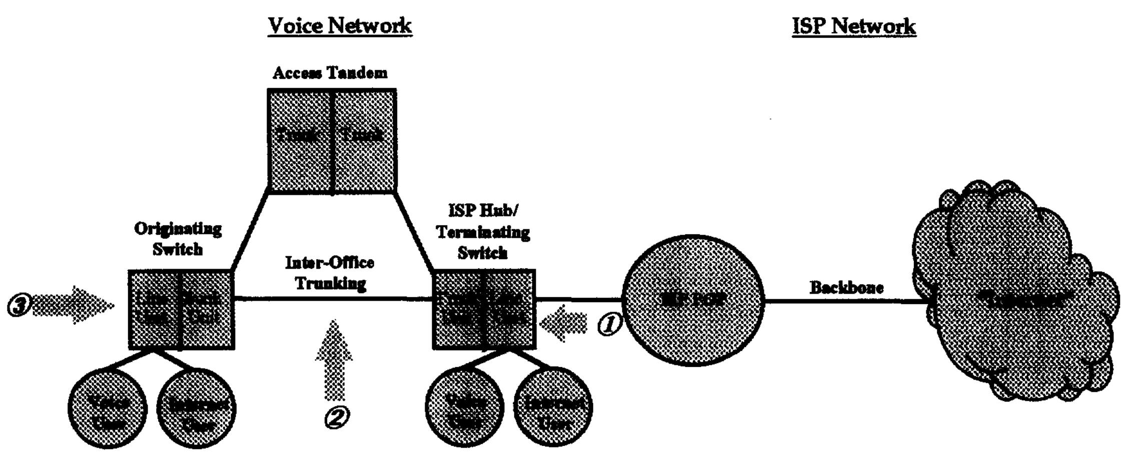
As shown in section 2.0, dial-up Internet traffic is rapidly emerging as a significant, if not dominant, part of the PSTN. Not surprisingly, this radical change in overall traffic patterns is having a major impact on the performance and investment requirements of Pacific Bell's voice network. In fact, the problems of network congestion are a warning that continuation of tremendous Internet growth requires changes in the way networks are used to access the Internet.

Pacific Bell's local switching offices were engineered to accommodate the predictable usage patterns of voice traffic. For example, business customers' heaviest usage generally occurs during the day with the average call lasting about 5 minutes; residential customers' heaviest usage occurs during the early evening with the average call lasting about 3 to 4 minutes. These patterns allow Pacific Bell to predict the amount of network resources required and grow the PSTN efficiently by sharing network resources across basic customer types.

However, with the Internet, heavy and unpredictable usage levels are causing network congestion on the PSTN, requiring immediate upgrades to key network resources, including: lines, trunks and inter-office facilities (IOF). These upgrades are necessary to accommodate Internet traffic and assure high quality voice telephony.

Internet congestion occurs in three key network areas: ① the line-side of the ISP hub switch[9]; ② tandem switches and the inter-office trunking network; and ③ the line-side of the originating switch (Figure 5):[10]

Figure 5



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[9] "ISP hub switch" refers to the local telco switch which serves the ISP - i.e., the switch that delivers dial-up calls to the ISP POP which typically houses modems, routers, email servers, etc.

[10] Internet traffic *originates* from almost every switch in Pacific Bell's network (because Internet users are dispersed throughout Pacific Bell's territory), but *terminates* in a smaller set of switches (about one-third of the total switches) associated with ISP POPs. Also, many switches act as both originating and terminating offices - i.e., both the end-user and ISP use the same switch.

Line-side blocking at the ISP hub switch (congestion-point ① in Figure 5)

Internet users typically dial-in to the lead number of an ISP "multi-line hunt group"[11] and the PSTN makes the connection to the ISP. Under this arrangement, ISP traffic is heavily concentrated at the line-side of the ISP terminating switch (① above). When too many calls hit the hub switch simultaneously, "incoming matching loss" (IML) is encountered - i.e., no trunk-to-line path is available to connect the call. At the same time, voice and Internet users may experience "dial-tone-delay" (DTD) due to the heavy incoming traffic through the line units - i.e., when the user picks up the telephone there is a delay before they receive dial-tone to make a call.

- To address these problems, Pacific Bell immediately takes the following action: identifies ISP lines creating the blocking and analyzes their distribution across all line units in the office; moves ISP lines to distribute load across existing line equipment in the office (a finite amount of "load balancing" can be implemented until the office reaches line capacity limits); and lastly, if capacity is reached, installs additional line equipment to accommodate the increased load.

Trunk-side blocking (congestion-point ② in Figure 5)

Increased loads from Internet traffic also create congestion in tandem switches and inter-office trunking networks which carry the calls from the originating switch to the terminating ISP switch. Trunk-side blocking - otherwise known as "office overflow" - occurs when there are not enough trunks or facilities to carry the traffic from the originating switch to the ISP hub switch. If blocking occurs in the tandem switches or inter-office trunking network, voice and Internet users hear a "fast busy" signal or a "no circuits available" recorded announcement - i.e., calls cannot be placed.

- To address these problems Pacific Bell immediately takes the following measures: analyzes which trunk groups are exceeding capacity, adds to trunk groups from existing (i.e., "reserve") capacity[12] and, if necessary, orders additional trunk equipment and/or inter-office facilities to meet acceptable network threshold levels.[13]

Line-side blocking at the originating switch (congestion-point ③ in Figure 5)

Finally, as Internet penetration continues to grow, end-user volumes at the originating switch can reach levels sufficient to cause the same problems experienced at congestion-point ① - i.e., incoming matching loss and dial-tone-delay.

- Although not yet a major problem for Pacific Bell, similar actions to ① are required in cases of congestion.

3.2 Extent of Congestion Problems

Congestion in Pacific Bell's territory is not isolated to only a few switches - quite the contrary. Like the nature of Internet traffic, congestion is widespread and growing. Of the 772 switches (originating, terminating, and remote) in Pacific Bell's network, approximately one-third act as ISP hubs and are therefore vulnerable to congestion. Between March, 1996 and January, 1997, 62 switches experienced

[11] A group of business lines (typically measured business lines, or "1MBs") serving an ISP POP accessed by one phone number.

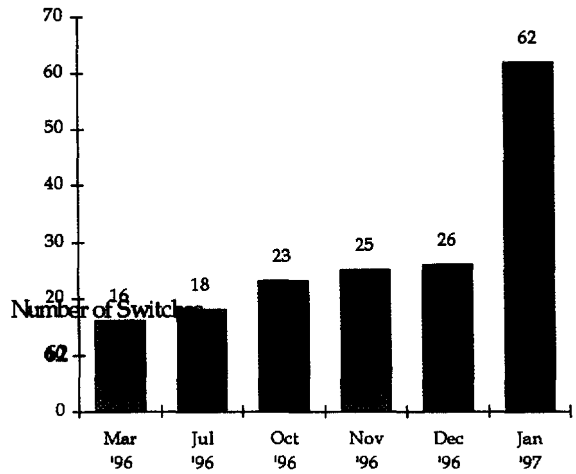
[12] 29 trunk groups across 62 impacted switches (see section 3.2) have already required augmentation at a cost of over $10 million (source: Pacific Bell Network Engineering).

[13] "Threshold levels" are the maximum traffic levels acceptable on the voice PSTN.

Internet congestion - i.e., exceeded normal network thresholds (see footnote 11). Congestion increased dramatically at the end of 1996 when America Online introduced flat-rate pricing, removing incentives for subscribers to monitor their usage. End-users significantly increased their dial-up MOU. (Figure 6)

Figure 6

Impacted Switches -
March, 1996 - January, 1997



Source: Pacific Bell Network Engineering

3.3 "Real World" Examples of Congestion

Several "real world" examples of actual Internet congestion are described below. These examples are intended to show the varied nature of Internet congestion in Pacific Bell's territory and range from an office in "Internet-rich" Silicon Valley, an office in a suburb of the east Bay Area and a small rural office in northeast California. **As shown in Figure 6, fifty-nine other "real-world" examples could be illustrated.**

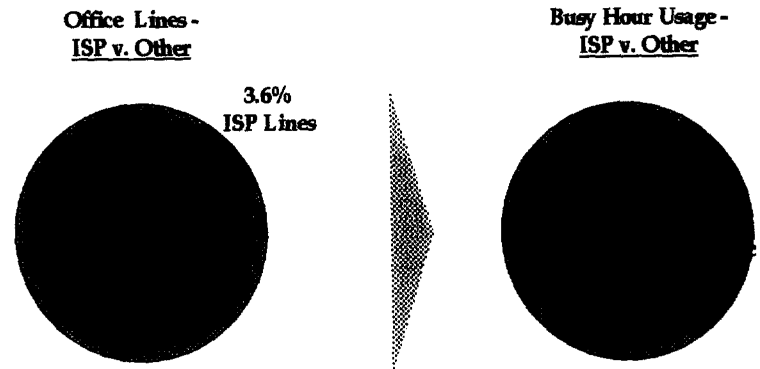
Example #1 - Switch in Silicon Valley

In late 1996, at a central office in Silicon Valley, traffic levels driven by a single ISP heavily impacted Pacific Bell's network performance, including:

- The ISP's hunt group grew from about 200 1MBs to over 1,500 1MBs.

- The ISP represented only 3.6 % of total office lines, but accounted for about 30% of total office busy-hour usage. (Figure 7)

Figure 7



Source: Pacific Bell Network Engineering

- The office's "busy hour" moved from 2:30 to 3:30 P.M. to 8:00 to 9:00 P.M - i.e., a six-hour shift driven by Internet rather than voice traffic.

- The ISP's dial-up traffic caused up to 16% incoming call blockage - i.e., about 1 out of 6 calls could not be completed.

In order to cope with these new traffic patterns, Pacific Bell quickly added line and trunk equipment.

Total cost: $3.1 million.

Example #2 - Switch in an East Bay Suburb

In early 1997, at a central office in the east Bay Area, several ISPs caused large office overflow problems because of heavy Internet traffic demands between 3:00 and 5:00 P.M.

- The average office total busy hour CCS[14] grew approximately 20% from its historical range. Six ISPs accounted for 11% of total busy hour CCS.

- Office overflow exceeded its normal monthly threshold by a factor of 8. This sudden increase in overflow was caused by dial-up subscribers from an adjacent city searching for a clear modem connection around 4:00 P.M. in the afternoon - i.e., kids home from school looking outside their normal ISP POP for access to the Internet because the ISP did not have sufficient modem capacity to handle simultaneous demands. (Figure 8)

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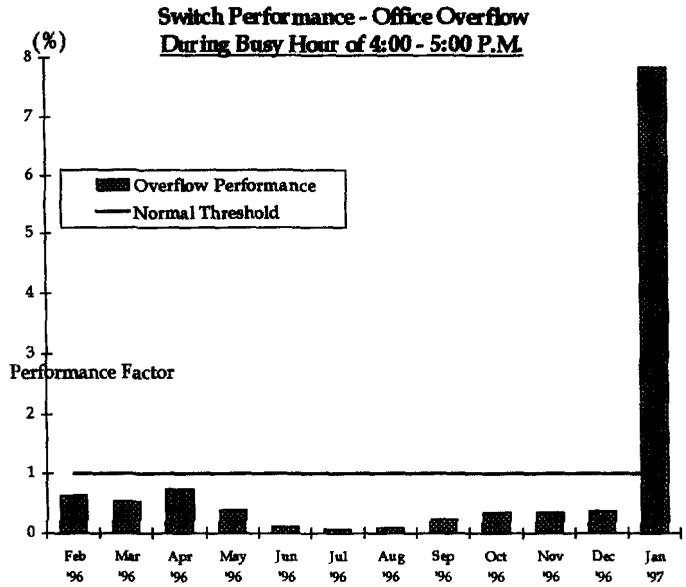
[14] "CCS" stands for "centum call seconds." In any hour, there are 36 CCS or 3,600 seconds and therefore the maximum line utilization is 36 CCS. Typical utilization of a voice line is about 3 to 4 CCS.

Figure 8



Source: Pacific Bell Network Engineering

- Pacific Bell received complaints from several voice customers (residential and large business) experiencing trunk-side blocking (e.g., "fast busy" signals or "no circuits available" announcements) because of office overflow. To address these problems Pacific Bell quickly augmented the tandem trunk group and 24 primary high usage trunk groups (installing a total of 912 new trunks).

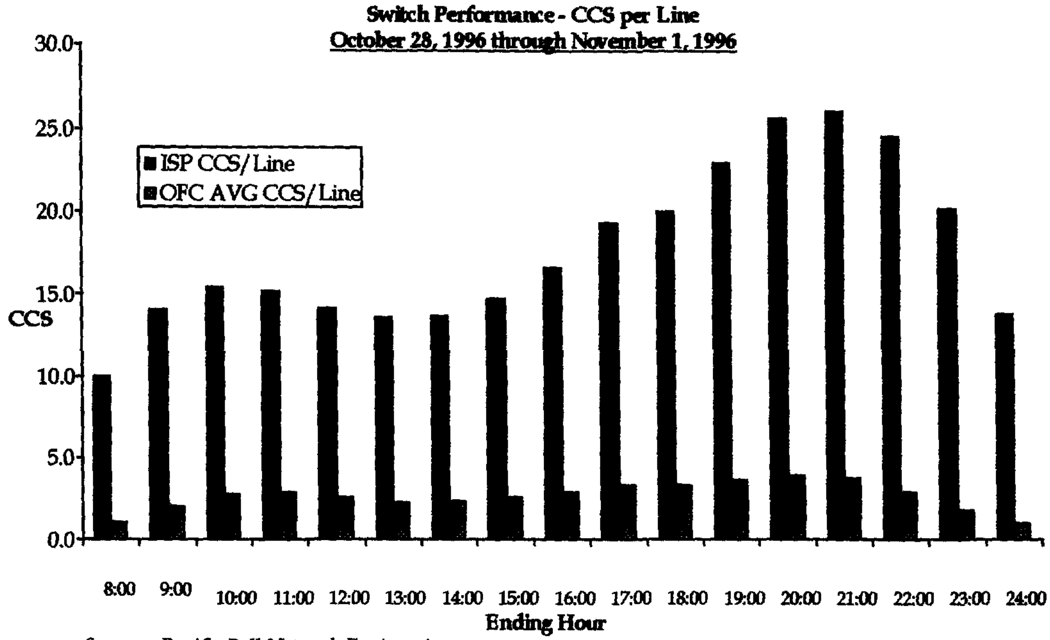
  Total cost: $1.2 million.

Example # 3 - Switch in a Rural Section of Northern California

In late 1996, at a central office in rural northeast California, dial-tone-delay (DTD) significantly exceeded its normal threshold due to traffic driven by several ISPs.

- During 1996, the average office busy-hour CCS steadily increased to 43% above its normal level.
- 5 ISPs, representing only 1.4% of total office lines, accounted for 10 to 15% of total office CCS.
- Between October 28, 1996 and November 1, 1996, the average ISP busy-hour CCS per line reached 25.5 - or, 6.5 times higher than the average office CCS per line of 3.9. (Figure 9)

Figure 9



Source: Pacific Bell Network Engineering

- DTD reached 1.9%, significantly exceeding the normal network threshold by 27%. Customers complained about the difficulty of getting normal dial-tone to place a call.

To cope with these problems, Pacific Bell added 8 line units and performed extensive line transfers to load balance the Internet traffic.

Total cost: $0.2 million.

In sum, Internet congestion is not a "theoretical" or "isolated" problem - rather, it continues to have real and widespread impact on Pacific Bell's facilities and normal voice customers. This congestion on the voice network will not subside as long as the cycle of *ESP exemption => flat-rate 'all you can eat' pricing => very long end-user sessions* continues.

4.0 Background and Impact of the ESP Exemption

4.1 Background

The ESP exemption was created by the Federal Communications Commission ("FCC") in 1983 to provide fledgling ESPs - including ISPs - temporary relief from normal access charges. The exemption allows ISPs to use local business services, such as 1MBs, to access the PSTN without paying per-minute access charges for use of the local telephone company's network like others (predominately long distance carriers, or IXCs). Ironically, many of the largest IXCs, who have paid access charges to connect to the voice network since 1984, are also ISPs and therefore the chief beneficiaries of the ESP exemption. Other very large telecommunications players are also receiving a "free ride" on the PSTN via the ESP subsidy.

- *Voice Call* - When a voice customer makes a call from San Francisco to New York, the local telephone company ('telco") provides originating switching and transport facilities to deliver the call to an IXC in San Francisco who then hauls the voice traffic to New York. The call is then "handed back" to the local telco, who then "terminates" to the called party using its switching and transport facilities. To compensate the telco for the use of its facilities, the IXC pays per-minute "access charges" to both the originating LEC (in San Francisco) and the terminating LEC (in New York).

- *Internet Call* - When a dial-up customer makes a call to the Internet, the telco provides exactly the same switching and transport facilities as for a voice call to deliver the traffic to an ISP's POP; however, unlike an IXC, the ISP pays no access charges.

In effect, the ESP exemption requires Pacific Bell to provide ISPs use of the voice network on a preferential basis relative to other customers. In fact, a typical ISP in Pacific Bell's territory pays just \$0.00073 per minute of access (i.e. less than one-tenth of a cent) compared to \$0.014 per minute of access (California intrastate) for customers (predominantly IXCs) not protected by the ESP exemption - a 95% discount.[15]

4.2 Impact of the ESP Exemption on Stakeholder Behavior

Not surprisingly, the subsidized pricing implicit in the ESP exemption drives uneconomic behavior on the part of ISPs, end users, and Pacific Bell and is antithetical to the long-term development of an appropriate Internet data network.

- *ISP Behavior* - ISPs are driven to build POPs connected to the voice PSTN rather than use data networks because of the extraordinary price break offered by the ESP exemption. The exemption also allows ISPs to offer flat-rate pricing to end-users for *unlimited* access to the Internet - i.e., it allows ISP's to offer a "free good" without incurring the true costs to provide the good. Clearly, building networks around the PSTN and encouraging end-users to stay on the voice network retards development of more appropriate fast-packet data networks.

- *End-User Behavior* - End-users have responded rationally to the flat-rate pricing by staying on-line longer. For example, in the week following AOL's introduction of \$19.95 per month for unlimited access to the Internet, users stayed online 15 minutes longer per session for a total of 3

[15] Assumes a concentration ratio of 15 dial-up customers (both residential and business) per ISP business line and an average usage of 45 minutes per customer per day (again, both residential and business customers) - i.e., each ISP business line would carry 20,531 minutes of dial-up Internet traffic per month. Given average monthly 1MB line rental revenue of \$15.05, this equates to \$0.00073 per minute of access.

million hours versus 2.2 million hours the previous week - a 36% increase in AOL's total traffic load.[16] Other ISPs have even offered "lifetime" Internet access for low one-time fees.[17] Again, this "all you-can-eat" pricing drives end-user behavior that is inconsistent with the underlying cost structure of the voice network which carries the traffic.

- *Pacific Bell Behavior* - Pacific Bell is required to invest capital to upgrade the voice network to carry Internet traffic - i.e., Pacific Bell is required to invest irrationally despite its strong belief that packet-data access technologies should form the basis for future growth of the Internet. Investment in the voice network will only prolong the development of more appropriate data technologies by Pacific Bell and other infrastructure players.

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[16] AOL statistics as reported in *Seidman's Online Insider*, December 6, 1996, page 4.

[17] "One-time fees" are based on a broadcast "TV-like" advertising business model. Because this model is still unproven for the Internet, it is inherently risky and therefore totally reliant upon the continuation of the ESP subsidy.

Section 5.0 Economic Impact of Internet Traffic on Pacific Bell

5.1 Financial Overview

The irrational behavior caused by the ESP exemption creates an equally irrational economic environment for Pacific Bell - namely, incremental Internet revenues do not cover incremental costs. More specifically, the costs to upgrade the voice network to support ISP traffic and additional lines (i.e., "second-lines") for end-users (especially where there are insufficient loop facilities) are greater than the revenues from ISPs' rental of lines to connect to the local network and end-user rental of additional lines to connect to their local switch.

5.2 Impact of ISP Traffic

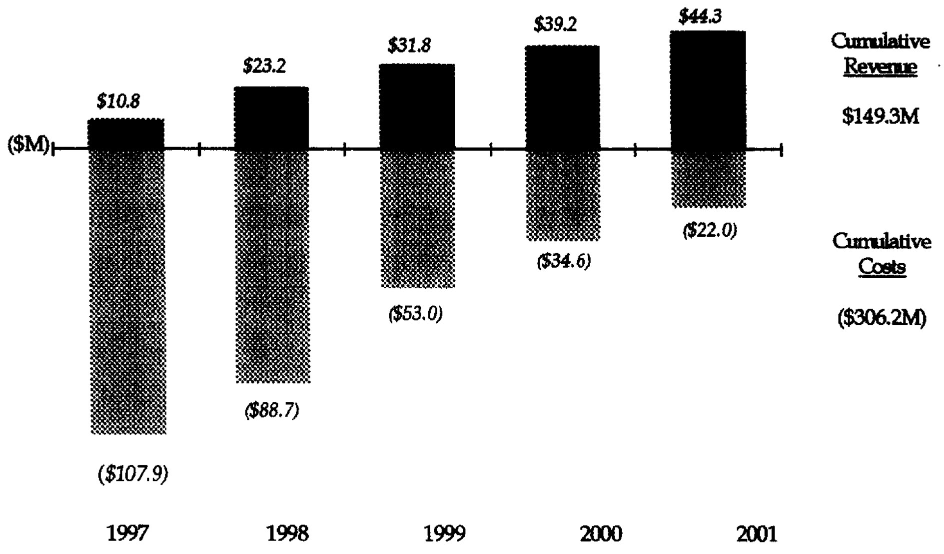
Pacific Bell earns *installation* and *rental* revenues on the business lines used by ISPs to connect their POP with the telco terminating office. These lines are typically 1MBs (which currently account for over 70% of ISP lines in Pacific Bell's territory), although migration to PRI (primary rate ISDN) lines is growing.[18]

Pacific Bell also incurs incremental capital and expense associated with upgrading the central office lines, trunks and inter-office transport facilities necessary to accommodate ISP dial-up Internet traffic (see section 3.0).

- Using conservative assumptions for dial-up Internet growth (see Figure 1, footnote 5), Pacific Bell will generate about $150 million in incremental revenue from ISPs, but spend over $300 million to support ISP traffic over the next 5 years. (Figure 10)

Figure 10

Incremental ISP Revenues and Costs - Pacific Bell Territory 1997 - 2001



Source: Pacific Telesis Financial Model

[18] Each PRI facility is equipped to handle 23 or 24 circuits (in most cases one circuit is required for signaling); however, like 1MBs, no usage charges are generated for terminating traffic over PRI.

These are misdirected funds - clearly, hundreds of millions of dollars in scarce capital should not be invested in the voice PSTN to handle increases in dial-up Internet traffic, but rather in deploying packet-data networks that will provide the foundation for future Internet growth.

5.3 Impact of End-User Traffic

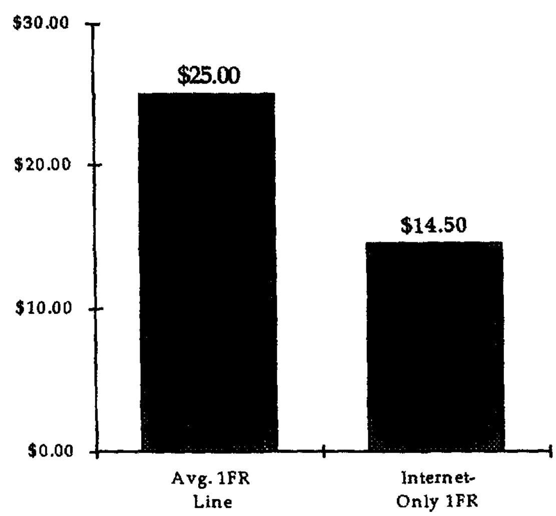
Pacific Bell earns *installation* and *rental* revenues on additional residential lines purchased for access to the Internet. Some *usage* revenue is also earned on additional and primary lines, but is limited because the vast majority of residential lines used for Internet access are flat-rate residential lines (approximately 80%)[19]

Pacific Bell also earns *installation* and *rental* revenues on additional business lines purchased for access to the Internet. These subscribers are typically small businesses who do not have the need for dedicated connections to their ISP. Unlike residential lines, Pacific Bell does earn *usage* revenues on local calls made by these business end-users. However, the majority of dial-up subscribers to the Internet are residential, not business, customers (again, about 80%).

- On a regular flat-rate residential voice line (1FR) over 40% of Pacific Bell's average monthly booked revenue of around $25.00 comes from usage charges (e.g., toll and switched access fees from long distance calls) or features (e.g., call waiting). However, on a 1FR line used only for local Internet access calls, usage and feature revenues are typically not generated and therefore Pacific Bell's only revenue source is the monthly rental fee - around $14.50.[20] (Figure 11)

Figure 11

Pacific Bell Monthly Revenue per Residential Line - Average 1FR v. Internet 1FR



Source: Pacific Bell

[19] Pacific Bell does not receive usage revenue for local calls made by flat-rate residential customers to an ISP's POP regardless of the frequency or duration of the calls

[20] Monthly 1FR rental is $11.25 plus the End-User Common Line (EUCL) fee of $3.50. On a booked (versus billed) revenue basis, the actual amount received by Pacific Bell is somewhat lower. (source: Pacific Bell financials)

- Regarding Figure 11, it is critically important to realize that subsidies inherent in the average $25.00 in revenue are currently being reduced through the FCC's access charge reform proceeding, which has a stated goal of eliminating subsidies embedded in per-minute access charges.

Pacific Bell incurs substantial incremental local loop costs associated with installing and maintaining additional residential and business lines ("additional lines" or "second-lines") including those used for dial-up Internet access. This cost is primarily driven by the additional facilities necessary to meet demand - e.g., for every additional line installed, 35% require new loop facilities (e.g., feeder or distribution plant). [21]

- Some participants in the ongoing discussion of the Internet's impact on existing voice networks have been confused on this point. It is important to remember that when the majority of residential areas were wired (e.g., copper wires physically placed in the ground or connected via aerial telephone poles) - decades before the current Internet explosion - one, or at most two, telephone lines were all a family was expected to need. However, as households add telephone lines for teenagers, facsimile machines and Internet access, local loop "inventory" is, or has been, exhausted.

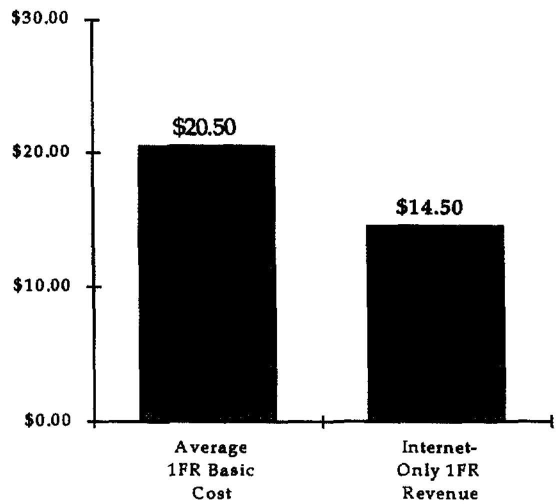
- Taking into account situations where the plant to deploy an additional line already exists (and simply needs to be "turned-up") and those situations where significant new loop deployment is necessary, the overall average cost to install each incremental additional line is around $1,000.

- Moreover, even if one were tempted to (incorrectly) compare the average costs for *all* Pacific Bell lines (not just incremental new lines) to revenues received from a line used for Internet access, the cost is still significantly higher than the revenues.[22] (see Figure 12; "basic" costs and revenues are those not associated with usage or features)

[21] 47% of additional line installations are not re-connects and that 75% of these installations require new facilities (source: Pacific Bell Network Operations).
[22] Source for costs: Pacific Telesis estimate, TSLRIC basis.

Figure 12

Pacific Bell -
Monthly "Basic" 1FR Cost v. Revenue from Internet Line



Source: Pacific Telesis

- Exacerbating this problem for the future, the recent Universal Service Fund decision in California to exclude "second lines" as beneficiaries of the fund will make the "gap" between revenues and costs even more significant.[23]

Therefore, to the extent additional lines are used for Internet communications, they do not contribute to the recovery of Pacific Bell's investment necessary to accommodate dial-up Internet traffic - they simply create more costs not covered by associated revenues.

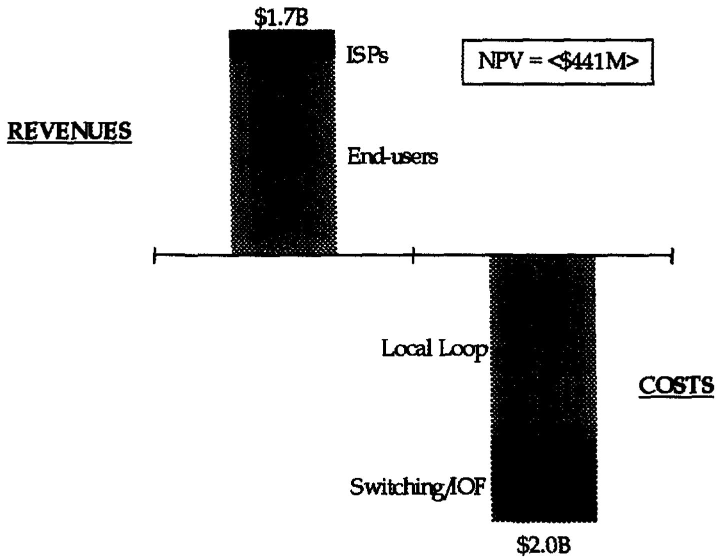
Section 5.4 Consolidated Economic Impact on Pacific Bell

Pacific Telesis has performed a detailed financial study to assess the overall impact of supporting Internet traffic on the PSTN, including costs and revenues driven by ISPs and end-users. By analyzing the total incremental revenues and costs generated from ISPs (see Figure 10) and end-users (both residential and business), the study concluded that, on a discounted cash-flow basis, supporting Internet traffic on the PSTN will create about $440 million in *negative* net-present value over the next 10 years (including tax expense). (Figure 13)

[23] CPUC Universal Service Decision of October 25, 1996 (96-10-066), p. 128.

Figure 13

Total Pacific Bell Internet-Related Cash Flows
Discounted over 10 Years



Source: Pacific Telesis Financial Model

The value proposition of supporting Internet traffic on the voice PSTN looks even less attractive if more aggressive assumptions are used for Internet growth. For example, if annual growth is 20% higher than anticipated, another $88 million in value will be destroyed (total of $529 million in negative net present value). Pacific Bell will not "make this loss up on volume."

Section 6.0 Solutions Needed to Support the Next Wave of Internet Growth

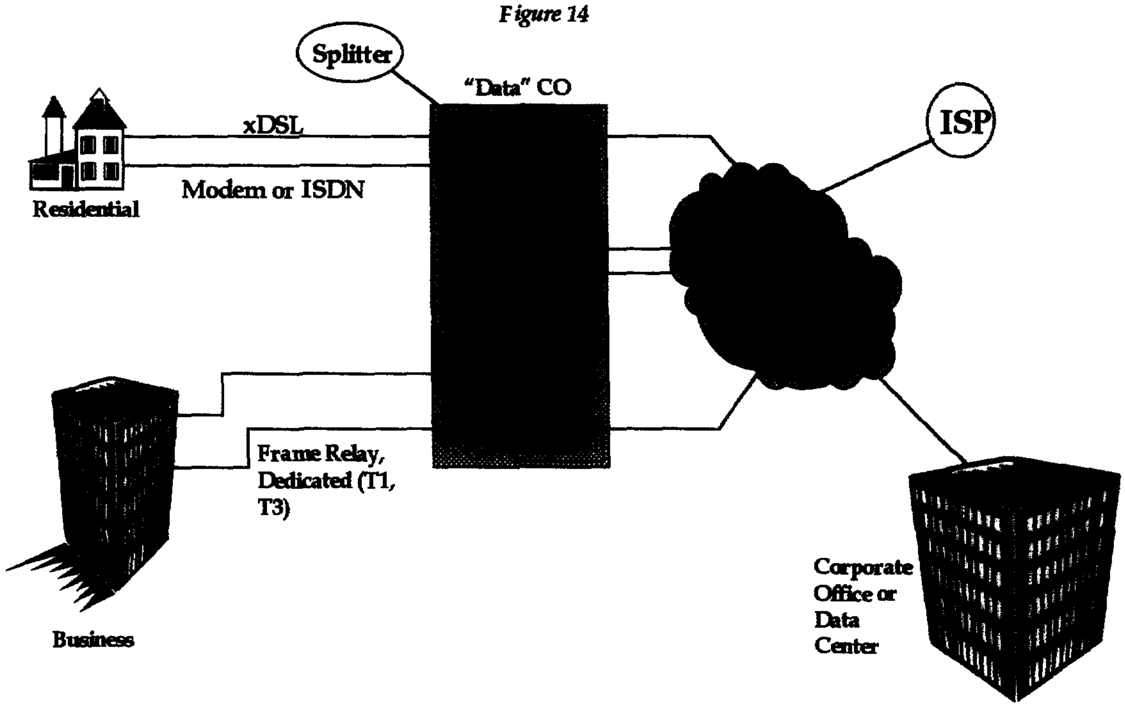
Section 6.1 Solutions Overview

Network and economic problems created by the ESP exemption will not simply "self-correct." Maintaining the ESP exemption only prolongs the current situation where no economic incentive exists for ISPs to migrate dial-up Internet traffic off the PSTN and on to more efficient data networks. As such, the ESP exemption poses a significant obstacle to sustaining and accelerating the robust development of the Internet.

In addition to the ESP exemption, other issues must be addressed to support the broad implementation of high-speed Internet access and create balanced, rational incentives for users and suppliers of Internet access capabilities.

- Local network operators (RBOCs, competitive access companies, etc.) and ISPs must develop new products for end-users that provide higher speed access over a more appropriate packet-data network. Pacific Bell understands the opportunity behind offering robust data capabilities and is committed to becoming a preferred supplier. We are in the process of developing an integrated, comprehensive "data central office" solution that will support end-user and ISP requirements over a broad range of bandwidth speeds, access technologies and service offerings.[24] (Figure 14)

Figure 14



- Regulation that does not strongly support the investment and innovation required to develop high-speed access to the Internet must be changed (if already in place) or avoided (if

[24] Two examples of these planned offerings are described in section 6.2.

contemplated). In addition to the ESP exemption, critical regulatory issues include: pricing flexibility of new products for RBOCs and resale contracts with other providers based on mutually agreed upon commercial arrangements rather than regulatory dictates.

Without appropriate state and federal regulatory action - or in some cases forbearance - to properly align economic incentives and allow a competitive market (for all participants including RBOCs), the "Second-Wave" of Internet growth will be slowed or destroyed.

Section 6.2 Product Solutions

Pacific Bell is developing product solutions which will provide users with higher-speed, more robust Internet access and alleviate congestion on the PSTN by encouraging the movement of Internet traffic from the voice network to a much more efficient data network. Examples of these product solutions are:

Data Access Gateway

This solution ("Access Gateway") is expected to be available in parts of Pacific Bell's territory in mid-summer 1997 (pending successful technology tests and regulatory approvals), providing a new access and transport service for use with Internet access by ISPs and remote Intranet access customers (e.g., corporate telecommuters). Access Gateway will establish, manage and maintain local access links for ISPs. More specifically, it will combine the T1, ISDN PRI, modem pool, router and Frame Relay interface functions into a single offering.

The T1 or PRI digital trunk interface and modem pool will support a variety of analog (e.g., 28 Kbps and 33 Kbps modems and potentially 56 Kbps modems as they become available and are tested for minimum service levels) and digital connections (e.g., ISDN at 64 - 128 Kbps). The router capabilities will support the industry standard suite of TCP/IP protocols and Frame Relay capabilities. Access Gateway will be managed by a real-time network management system.

Built upon Pacific Bell's experience of operating local networks, this data access capability will bring to end-users and ISPs a high degree of service quality and a commitment to maintaining that quality as the Internet grows.

End-User Benefits

Access Gateway provides end-users a more predictable and richer experience on the Internet.

- *More reliable access to the ISP* - Customers will not encounter as many problems associated with accessing an ISP's modems or congestion on the voice network (e.g., fewer busy signals). Dial-up Internet access will become more reliable and more characteristic of voice telephony quality.

- *Wider availability* - It is the intent of Pacific Bell to allow wide geographic access to Access Gateway, helping a larger cross-section of users access the Internet.

- *More robust Internet products and services* - Simple, competitively priced connectivity at higher access speeds will stimulate richer, more entertaining and useful content and web-site development.

Corporate End-User Benefits

Access Gateway will provide easy remote connections for corporate telecommuters.

- *Remote LAN and host-site access* - Access Gateway allows the corporate telecommuter to dial-in from remote locations. It allows the corporation to extend its presence on a "virtually local" basis without the need to maintain facilities beyond the boundaries of a corporate site.

- *An alternative to expensive dedicated facilities* - By linking the public telephone network with the fast-packet network, Access Gateway allows corporations to save considerably over costly, mileage-sensitive, point-to-point (i.e., "dedicated") facilities.

ISP Benefits

Access Gateway will help ISPs efficiently grow and manage their Internet access business.

- *Reduced capital and operating expenses* - Access Gateway will free-up capital for other ISP needs associated with rapid expansion. Access Gateway allows ISPs to swap large, difficult to anticipate, up-front capital outlays (for modem purchases, etc.) for more manageable and predictable expense outlays spread over time. Access Gateway also reduces the costs associated with upgrading and integrating access technologies (modems, routers, etc.) and allows both small and large ISPs to take advantage of the scale operations built into the Pacific Bell network.

- *Improved network efficiency and reliability* - Access Gateway will relieve ISPs from the burden of upgrading and managing large and complicated access and transport networks. It provides a smooth upgrade path to higher-speed access options like 33 Kbps and 56 Kbps modems and ISDN, and integrates network management system and quality control processes across all these technologies. In short, Access Gateway allows ISPs to focus on managing customer relationships rather than large and complicated networks.

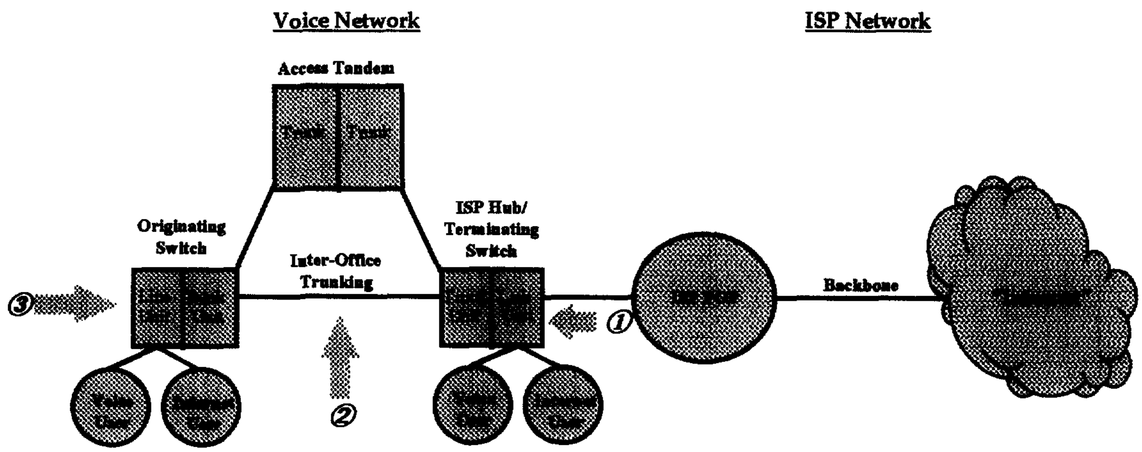
- *Lower risk expansion into new territories* - Access Gateway will allow ISPs faster time to market in new customer locations at lower cost. Access Gateway is designed to allow ISPs to quickly scale their network requirements to customer demand. This will be particularly valuable as Internet penetration expands beyond key urban markets into more geographically dispersed areas.

PSTN Benefits

Access Gateway is also being developed to encourage the movement of Internet traffic off Pacific Bell's voice network, relieving potential congestion and providing a more robust and scaleable foundation to support higher-speed Internet growth.

- *Relieves congestion on the voice network* - Access Gateway will take dial-up traffic from the end-users' originating switch and carry it via a fast-packet data network to the ISP. This topology primarily relieves congestion at the ISP hub switch and at tandem switches and associated inter-office trunking (congestion points ① and ② in Figure 15 below).

Figure 15



Access Gateway returns Pacific Bell's switches to processing voice traffic and protects traditional voice customers from service degradation caused by temporary Internet congestion.

- *Releases investment for data networks* - An investment in a data capability is an investment in the future of the Internet growth - namely, fast-packet data networks.

xDSL

Pacific Bell is a strong supporter of xDSL technologies[25] as the next generation of high-speed access (subject to favorable results of further technology testing and regulatory approvals). xDSL is an access technology will utilize the existing cooper loop infrastructure in Pacific Bell's territory and provide dramatically faster Internet access speeds than currently available. While xDSL will initially target Internet users willing to pay more for much higher speeds, it has the potential to eventually become highly penetrated in the mass market as end-users see the inherent value of a very fast Internet connection and begin shifting their purchases of entertainment, news and information from traditional channels towards the Internet.

End User Benefits

- *Higher-speed access* - xDSL will offer end-users Internet access at speeds of up to 1.5 Mbps, or over *50 times* the speed of a 28.8Kbps modem. This performance level completely changes the way a consumer will use the Internet. For example, at 1.5 Mbps, a short video or animation file can be downloaded to the desktop in less than a minute, instead of the 41 minutes necessary with a 28.8 Kbps modem.

- *Use of a single line* - Also, because xDSL can be supported on the same copper loop as voice service, subscribing to xDSL does not require ordering an additional telephone line.

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[25] "xDSL" is a generic term for a range of Digital Subscriber Line technologies, including ADSL, HDSL.

Corporate End-User Benefits

- *Connectivity at lower cost* - For the corporation utilizing this technology for telecommuting employees, xDSL will provide not only greatly enhanced connectivity but, especially in the case of businesses who may employ large numbers of temporary or contract employees, significantly reduced overall costs.

ISP Benefits

- *Extends product offering* - xDSL will allow ISPs to offer residential customers significantly higher access speeds to the Internet. In particular, xDSL will fill a gap between ISDN (which is only one-tenth the speed of xDSL) and the fast but more expensive dedicated circuits used by large business customers. Giving consumers access to higher bandwidth products expands the range of offerings an ISP can make to different customer segments.

- *Wholesale and retail options* - Pacific Bell's current intention is to provide xDSL capabilities on a wholesale basis to other ISPs. But an ISP is not limited to this option - using the options afforded it by the 1996 Telecommunications Act, an ISP can become a telecommunications carrier and rent an unbundled local loop from a local telco, or rent it from a competing LEC that purchases it from an incumbent LEC, purchase terminating xDSL technology (a "DSLAM") and offer a competing xDSL product.

PSTN Benefits

- *Relieves congestion on the PSTN* - xDSL will completely bypass the PSTN voice network and therefore will have direct impact on the PSTN congestion caused by Internet traffic - i.e., each dial-up user who migrates to xDSL helps reduce potential voice network congestion.

Section 6.3 Regulatory Solutions

The ESP exemption was initially conceived in 1983 to protect service providers - during a transition period - from paying the full economic cost of using the voice PSTN. This has allowed the ISP industry to blossom into a multi-billion dollar business. Although the ESP exemption appears to support Internet expansion, it is now retarding the development of a powerful "Second-Wave" of Internet growth - namely, faster and more reliable access via packet-data networks. If the exemption is removed and a more rational technical and economic framework implemented, truly competitive market forces would lead to a range of benefits, including:

- *Internet traffic will migrate to a more efficient access service* - Without the ESP exemption, the PSTN will become a less attractive option than packet-data access networks built to carry Internet traffic. New data solutions such as Access Gateway and xDSL will flourish when subsidized access is no longer available on the PSTN.

- *Capital will be more quickly invested in technologies of the future* - Pacific Bell and other Internet access suppliers will be more motivated to invest in new technologies, such as xDSL and Access Gateway without the subsidized "competition" of the PSTN.

- *A new market will be created* - Innovation and investment in data technologies will be released as a wide range of equipment and service providers suddenly find the opportunity to offer price-competitive services which collect traffic at end users' originating switches and deliver it to a packet-switched network. Competition for this business will inevitably lead to innovation and investment in the Internet - which will only benefit end-users.

Section 7.0 A Call to Action

The FCC *must act now* to support the continued growth in Internet usage. Current policies - with their misaligned incentives - hamper the creation of a truly competitive environment for more attractive end-user access product offerings. Solutions are needed today to make widely available, high-speed Internet access a reality rather than debate.

- *Remove the ESP exemption* - The most important solution is the immediate removal of the ESP exemption and application of post-reform rates. This change should occur in the Access Charge Reform Order (CC Docket 96-262). If the FCC does not remove it in this order, then it should remove it via a very quick timeline in the Usage of the Public Switched Network by Information Service and Internet Access Providers Order (CC Docket 96-263). Removing the ESP exemption is the simplest and most direct solution for treating all access customers (IXCs and ISPs) equally and creating the incentive for investment in - and usage of - data access networks.

- *Create a special class of services for ESPs* - If the FCC cannot order access charge reform quickly enough to accommodate the pace of Internet growth, it should recognize the unique nature of dial-up Internet traffic (as illustrated throughout this document) and create a special class of services for ESPs. The FCC could waive embedded subsidies in current access charges - i.e., carrier common line charges (CCLC), transitional interconnection charges (TIC) and reserve deficiency amortization payments - and immediately institute the "subsidy-less" rate. This option would require a means of recognizing ESPs (e.g., registration) as a special class of user and would provide the proper incentive to migrate dial-up Internet traffic off the PSTN and on to data networks. [26]

- *Provide a framework for states to implement necessary changes* - If, contrary to our recommendation, the FCC does not immediately remove the ESP exemption or apply a special class of tariffs for ESPs, it should provide states a framework for doing the same - i.e., the FCC should modify the ESP exemption and allow states to treat ESPs differently from regular business subscribers. For example, in California, which has the highest Internet traffic levels and household penetration rate in the country (see section 2.0), Pacific Bell might ask the Public Utilities Commission (PUC) to approve a new local service for ISPs that includes terminating usage charges on dial-up Internet calls above a certain duration. This service would not be available to general business customers, and therefore, would require the PUC to recognize ESPs as a special class of user and identify means for ESP certification (see footnote 26).

  It is important to recognize that a usage fee would most likely have a very minimal impact on the vast majority of end-users. For example, assuming an access fee of $.01 per MOU (fully passed through to the end user by the ISP), about 80% of end-users would be impacted less than $5.00 a month.[27]

- *Provide incentives for investment in data networks and technologies* - Regardless of what federal and state solutions are implemented to assure robust Internet growth, regulation must be

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[26] A means of ESP recognition is necessary because (a) it is not possible to distinguish ESP traffic from other traffic and (b) many competitive LECs (CLECs) are acting as "ESP specialists" by using interconnection arrangements to avoid paying access charges and - in many cases - receiving compensation from the incumbent LEC for terminating traffic to the CLEC. We do not believe it was the intention of the FCC to create a system that prevents incumbent LECs from the opportunity to recover their costs and compete evenly for ESP business (see discussion of CLEC issue in the "Federal Interconnection Proceeding and Local Competition" section of Pacific Bell's NOI comments). Registration of ESPs would provide assurance that *only ESPs* were using the special tariffs.

[27] Based on usage data from Pacific Bell traffic study.

eliminated (if already in place) or avoided (if contemplated) that does not strongly support the investment and innovation required to develop high-speed data access networks. In particular, data access providers should have pricing flexibility - e.g., contract pricing that allows term and volume discounts and resale agreements based on mutually agreed upon commercial arrangements, not regulatory dictates.

In summary, Pacific Telesis believes there is a solution to the ESP exemption that provides the correct economic incentives for ISPs to move to more efficient, higher quality data access networks (supplied by Pacific Bell and other competitors) - without impacting current business models or substantially increasing end-user costs. We urge the FCC to move quickly to invoke the "Second-Wave" of Internet growth. Pacific Bell is committed to working with all stakeholders - including regulators, industry participants, and end-users - in developing a reasonable and balanced solution.

EXHIBIT B

Comments by Pacific Telesis Group
March 24, 1997

Exhibit B

Access Services Employed By Telemessaging ESPs

The ESP market has two general segments -- 1) the data service ESPs and 2) the voice service, or telemessaging, ESPs. The data ESPs have the greatest impact on Pacific Bell's and Nevada Bell's networks, and our Comments on the NOI concentrate on that segment. Data ESPs include Internet access providers, online service providers, Value Added Networks (VANs), and bulletin board services. Data ESPs generate over 90% of total ESP minutes of use in Pacific Bell's and Nevada Bell's territories.

Telemessaging ESPs include voice mail providers and live answering services that use enhanced functionalities. They generate an estimated 3 Billion minutes of use per year in Pacific Bell's and Nevada Bell's territories.

It is the access architecture that determines the cost of providing access, not the type of ESP involved. Telemessaging ESPs utilize two different access architectures in Pacific Bell's and Nevada Bell's service areas. One is very similar to those used by data ESPs, and the other is unique to telemessaging ESPs. Pacific Bell's telemessaging entity uses both access architectures.

The first access architecture involves establishing a point of presence in each local calling area where the telemessaging ESP desires to provide service. This is similar to the access architecture used by data ESPs. At each telemessaging ESP POP, Direct Inward Dial ("DID") PBX trunk services are used to connect the serving Central Office to the ESP's premises. These trunks include an optional feature that provides telephone numbers in blocks of 100 numbers. The ESP uses specialized CPE to route forwarded calls to the user's mailbox or to a pre-established live-answering service based upon the DID telephone number to which calls are forwarded. This one-for-one relationship of DID telephone number and end-user mailbox, allows the ESP to associate each call with the correct end-user's service. In the case of data ESPs, the